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EXAMINER	
LIU, SUE XU	

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/677,856	GROOT ET AL.	
	Examiner	Art Unit	
	Sue Liu	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *1-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/27/03;10/2/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Sequence Rule Compliance

Applicant's reply (filed on 2/2/06) to the previously sent "Notice to Comply" with Sequence Rule (sent 12/29/05) is acknowledged. However, applicant's reply (filed on 2/2/06) is **not fully responsive**, because a paper copy of the sequence listing has not been submitted as required by the Sequence Rule under 37 C.F.R. 1.821 (c). (See the attached Notice to Comply).

Claim Status

Claims 1-31 are currently pending;

Claims 1-27 have been withdrawn;

Claims 28-31 are being examined in this application.

Election/Restrictions

1. Applicant's election without traverse of Group XI (Claims 28-31) in the reply filed on 4/11/06 is acknowledged.

2. Claims 1-27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4/11/06.

3. Applicants elected without traverse the following species in the reply filed on 4/11/2006 is acknowledged:

A. Applicants elect a DC-SIGN molecule involved in modulating an immtme response. Claims 28-31 read on the elected species. Claims 28-31 are generic with respect to the elected species.

B. Applicants elect cytokines. Claims 28-31 read on the elected species. Claims 28-31 are generic with respect to the elected species.

C. Applicants elect a TH2 mediated immune response. Claims 28-31 read on the elected species. Claims 28-31 are generic with respect to the elected species.

D. Applicants elect airway hyperresponsiveness. Claims 28-31 read on the elected species. Claims 28-31 are generic with respect to the elected species.

E. Applicants elect an antibody. Claims 28-31 read on the elected species. Claims 28-30 are generic with respect to the elected species.

F. Applicants elect an antibody. Claims 28-31 read on the elected species. Claims 28-30 are generic with respect to the elected species.

G. Applicants elect the product of the gene identified by SEQ ID N0: 129 or an equivalent of SEQ ID No: 129 in mammal. Claims 28-31 read on the elected species. Claims 28-31 are generic with respect to the elected species.

H. Applicants elect airway hyperreactivity. Claims 28-31 read on the elected species. Claims 28-31 are generic with respect to the elected species.

Priority

4. This application is a CIP of U.S. Patent Application Nos. 10/369,214 (filed 2/15/2003), which is a CONTINUATION of PCT/NL01/00610 (filed 8/16/2001).

However, the parent application (10/369,214) does not provide support for the subject matter claimed in the instant Claim 31 (i.e. the antibody ERTR9). Thus, Claim 31 does not obtain the early priority date of the parent application (2/15/2003).

5. Claims 28-30 have the priority date of 2/15/03.

Claim 31 has the filing date of 10/02/2003.

Specification

6. The disclosure is objected to because of the following informalities:

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01. See Example 9 in the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the **first paragraph** of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Written Description Rejection

8. Claims 28-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant

art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The instant claims recite a pharmaceutical composition comprising: a substance capable of blocking a product that is expressed from a gene with the signature sequence OtS1-B7 or a product that is expressed from a gene that is an equivalent of a gene with the signature sequence OtSl-B7, and a pharmaceutical acceptable carrier and/or diluent. The said "substance" can be a proteinaceous substance such as an antibody, as recited in the instant dependent claims.

To satisfy the written description requirement, applicants may convey reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention.

Applicants may show possession of an invention by disclosure of drawings or structural chemical formulas that are sufficiently detailed to show that applicant was in possession of the claimed invention as a whole. See, e.g., Vas-Cath, 935 F.2d at 1565, 19 USPQ2d at 1118.

The written description requirement of 35 U.SC. 112 exists independently of enablement requirement, and the requirement applies whether or not the case involves questions of priority. The requirement applies to all inventions, including chemical inventions, and because the fact that the patent is directed to method entailing use of compound, rather than to compound per se, does not remove patentee's obligation to provide a description of the compound sufficient to distinguish infringing methods from non-infringing methods. See Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916, 920-23, 69 USPQ 2d 1886, 1890-93 (Fed. Cir. 2004).

With regard to the description requirement, applicants' attention is invited to the decision of The Court of Appeals for the Federal Circuit, which held that a "written description

of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula [or] chemical name,' of the claimed subject matter sufficient to distinguish it form other materials." University of California v. Eli Lilly and Co., 43 USPQ2d 1398, 1405 (1997), quoting Fiers v. Revel, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993) (bracketed material in original) [The claims at issue in University of California v. Eli Lilly defined the invention by function of the claimed DNA (encoding insulin)].

The written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species or by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical an/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. See Eli Lilly, 119 F. 3d at 1568, 43 USPQ2d at 1406.

Claim 28 is drawn to a genus of substance comprising a genus of material entities (that are capable of blocking a product from a specific gene) as defined in the instant specification (see BSTX (64) of the spec.) and claims. Claim 28 is also drawn to a genus of genes that are equivalents of a gene with the signature sequence OtS1-B7. Claims 29 and 30 are drawn to a genus of proteinaceous molecules and a genus of antibodies (that are capable of blocking a product from a specific gene). Neither the instant specification nor the claims have demonstrated common structure and/or function for the claimed genus of "substances", genus of "equivalent genes", genus of "proteinaceous molecules", and/or "antibodies". In addition, no representative numbers of species for each claimed genus is provided to show possession of the claimed genus

of "substances", genus of "equivalent genes", genus of "proteinaceous molecules" and/or "antibodies" that are capable of blocking a product from a specific gene (OtS1-B7).

The only examples of "substances", "proteinaceous molecules" or "antibodies" that are capable of blocking a product expressed from a gene with the signature sequence OtS1-B7 are the ERTR9 antibody, and polyclonal antibodies against mDC-SIGN (signature sequence OtS1-B7). Two examples of antibodies are not enough to show possession of the entire genus of antibodies, "proteinaceous molecules", or "substances" that are capable of blocking a product from a gene with the signature sequence OtS1-B7. To obtain the claimed genus of substance, one of skill in the art would have to carry out a process that would involve testing various substances that may or may not block the product of the signature sequence OtS1-B7 containing gene. Without identifying the substance with the required property, the claimed pharmaceutical composition comprising such a substance with the said specific property cannot be produced. Thus, no possession of the said substance with the said blocking property can be demonstrated.

As discussed above, only two antibodies are described in the specification. Although other antibodies have been demonstrated in the art that are capable of blocking a product from a gene with the signature sequence OtS1-B7. However, the claims are drawn to any substance, proteinaceous molecule, and antibody, comprised in the recited pharmaceutical composition.

For the claimed genus of "equivalent genes", the only representative examples are the human and mouse homologues recited in the specification. The term "equivalent" as described in the specification (e.g. para. [0005]) clearly encompasses additional genes other than homologous genes. The instant specification does not provide any common structure and/or function, or a representative number of species for the entire genus of equivalent genes. Even for

the homologous genes, the specification has only demonstrated very close homologues of the DC-SIGN family (which has the so-called signature sequence OtS1-B7). The specification does not provide representative number of species, or common structure and/or function for the genus of equivalents of a gene "with" the signature sequence OtS1-B7 that would encode functional protein products, which can be blocked by the claimed substances.

Therefore, applicants are not in possession of the entire genus of substances, proteinaceous molecules, and antibodies that are capable of blocking a product from a gene or any equivalent of the gene with the signature sequence OtS1-B7. Applicant's claimed scope represents only an invitation to experiment regarding possible substances that might be used as the claimed pharmaceutical composition.

To provide evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof.

Scope of Enablement

9. Claims 28-30 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for use of antibody ERTR9 as a pharmaceutical composition, does not reasonably provide enablement for pharmaceutical uses of other substances (including proteinaceous substances and/or antibodies). The specification does not enable any person

skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

Factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. §112, first paragraph, have been described *In re Wands*, 8 USPQ2d 1400(1988). They are:

1. The breadth of the claims;
2. The nature of the invention;
3. The state of the prior art;
4. The predictability or lack thereof in the art
5. The level of skill in the art;
6. The amount of direction or guidance present;
7. The presence or absence of working examples;
8. The quantity of experimentation needed.

The breadth of the claims

The breadth of the claims seems to encompass pharmaceutical composition comprising any substance (including proteinaceous substance and/or antibodies; chemical compounds; nucleic acid; etc., as defined in the instant specification (see BSTX (64)) that are capable of blocking a product expressed from a gene with the signature sequence OtS1-B7 with intended therapeutic uses in animals or humans. However, the instant specification does not describe pharmaceutical uses of any substances that have the said "blocking" property. The instant specification only prophetically discusses the possibility of using the claimed substances as pharmaceutical compositions.

The nature of the invention

The nature of the invention as recited in the instant claims is pharmaceutical compositions with intended therapeutic uses to treat humans and/or other animals.

The state of the prior art/ The predictablility or lack thereof in the art

Utilization of various "substances" (diverse chemical compounds and/or biological molecules) as pharmaceutical composition (especially administering to human) is highly unpredictable. This is especially true for substances such as proteins (including antibodies). There are many problems existing with administering protein drugs to human. First, the protein drug may be toxic to the subject being administered, and hence will not elicit the intended pharmaceutical effects. To evaluate toxicity and efficacy of a protein drug, pre-clinical animal model testing and clinical trials are required. Adverse effects of these protein pharmaceuticals cannot be generalized, and are highly unpredictable. For example, Cianfrocca et al (British Journal of Cancer. (2006), pg 1-6) have reported a phase I clinical trial on a particular peptide drug with only limited success in treating patients with cancer.

Second, the mode of delivery for these protein drugs is also critical, and the success of the delivery is highly unpredictable. The major problem with protein pharmaceuticals is the mode of delivery. For example, Russell-Jones reviews oral delivery of protein drugs (Journal of Drug Targeting. Vol. 12(2): 113-123. 2004). The reference states that "peptide and protein pharmaceuticals, in contrast to the traditional chemically synthesized compounds, are highly susceptible to proteolysis within the intestine and also have very low oral bioavailabilities. The low oral bioavailability of these compounds is due to the almost impenetrable barrier provided

by the epithelial cell layer to certain types of molecules..." (see pg 113, left col.) The reference also teaches non-oral dosage forms are more difficult and traumatic to self-administer than oral dosages. Although methods of enhancing the delivery of protein drugs into subjects are in development, "early attempts to enhance the oral uptake of many peptides and proteins were, in the main, unsuccessful" (see pg 121, left col., last para. of Russell-Jones reference).

For administering antibodies as pharmaceutical drugs, there exists many major limitations such as the large size of the antibodies, and nonspecific uptake of the antibody molecules by the liver and the reticuloendothelial system (see Abstract of the Aina reference), as reviewed by Aina et al (Biopolymers. Vol. 66: 184-199; 2002). The reference teaches that the said problems would result in poor tumor penetration of antibody pharmaceuticals and dose-limiting toxicity to the liver and bone marrow (see Abstract of the reference).

For administering peptides as pharmaceutical drugs, there are additional problems such as specific cell targeting and cell penetration. El-Andaloussi et al (Current Pharmaceutical Design. Vol. 11: 3597-3611; 2005), throughout the reference, reviews cell-penetrating peptides. The reference teaches that the "major obstacle in the development of new therapeutic agents is the low bioavailability of hydrophilic substances. Drugs that bind to intracellular targets must penetrate the lipid bilayer surrounding the cell in order to exert their effect" (see Abstract of the reference).

Therefore, the state of the art for using various chemical or biological substances (at least proteins) as pharmaceuticals to treat various diseases is highly unpredictable. Although there are positive initial indications for the feasibility of using certain proteins for certain diseases in

humans, there is no general demonstration of a successful treatment using proteins administered variously.

The level of one of ordinary skill

The level of skill would be high in order to carry out the intended use of the claimed pharmaceutical composition.

The amount of direction or guidance present

The only guidance presented in the instant specification is methods of ERTR9 into mice and observing the effects to their induced airway manifestations of asthma (pg 67, Example 10B of the reference). There is no guidance on administering other substances (that blocks a product that is expressed from a gene with the signature sequence OtS1-B7) to animals or humans.

The presence or absence of working examples

There are no working examples present to demonstrate the pharmaceutical uses of the claimed substances other than the antibody, ERTR9. No working example is provided to demonstrate the pharmaceutical uses of administering other substances in human or animals for treatment of specific diseases.

The quantity of experimentation needed

Due to the unpredictabilities of using peptides for treatment of various disease in any subject (as discussed supra), and the lack of guidance in the instant specification, undue experimentation would be required. Given the complications or mixed results of using various

substances (including proteins) as pharmaceuticals to treat disease such as cancer, and the complexity in developing a feasible protein drug delivering method, undue experimentation would be required. Because the art does not provide successful and general methods of administering proteins (including antibodies) for treatment of various diseases, undue experimentation such as trial-and-error process would have to be employed for developing the various components for protein pharmaceuticals including the mode of delivery, dosage requirement, toxicity testing, efficacy testing, etc.

Conclusion

Due to the non-routine experimentation necessary to determine the feasibility of using pharmaceutical composition comprising various substances such as proteins for therapeutic uses; the lack of direction/guidance presented in the specification regarding the specific requirements for such a pharmaceutical composition; the unpredictability of the treatment methods using various substances (including proteins) as established by the state of the prior art; the breadth of the claims, undue experimentation would be required of a skilled artisan to make and/or use the claimed invention in its full scope.

10. The following is a quotation of the **second paragraph** of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 28-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 28 recites the term "capable of blocking", which is indefinite. The term "blocking" can have multiple interpretations such as inhibiting the protein product, binding to the protein product, inhibiting the mRNA from the gene; inhibiting the gene expression and therefore reduce the production of the coded protein, etc. The claim language is also not clear in term of from what the substance is capable of "blocking" the said product (e.g. protein).

Claim 28 recites the term "signature sequence OtS1-B7", which is indefinite. Neither the instant specification nor the claims clearly define the metes and bounds of a so-called "signature sequence OtS1-B7", which is not a term known in the art. The instant specification only states "The term "OtS1-B7 or an equivalent of OtS1-B7" is herein defined as protein (fragment) encoded by a mouse gene with the signature sequence OtS1-B7 or an equivalent thereof in another mammal, for example a human homologue of the mouse gene with the signature sequence OtS1-B7." (see bottom of para. [0005]). The term "signature sequence OtS1-B7" recited in Claim 28 seems to refer to gene sequences (i.e. nucleic acid sequences), but not protein sequences. However, the definition recited in the specification and above refers to OtS1-B7 as a protein. In essence, the definition recited above for OtS1-B7 is stating that OtS1-B7 is a protein encoded by OtS1-B7 gene. It does not provide an adequate definition of the recited "signature sequence OtS1-B7".

The instant specification also recites "A signature sequence herein refers to a marker sequence and/or sequence or any other mode of identification of a sequence (i.e name)" (see

para. [0012]), which does not provide an unambiguous definition for the term "signature sequence". By this definition, any sequence can be a signature sequence.

In response to the Restriction Requirement, applicants state "the nucleotide sequence of signature sequence OtS1-B7 can be deduced based on the specification..." (see Applicant's response filed on 4/11/06; pg 7). In the paragraph (of the instant specification) pointed out by the applicants ([00138]), only OtS1-B7 fragments within the OtS1-B7 gene sequence were recited. It is not clear if "signature sequence OtS1-B7" is to mean the entire OtS1-B7 gene sequence or fragment thereof. Therefore, a person of ordinary skill in the art would not be able to define the metes and bounds of the claimed "signature sequence OtS1-B7" and its "equivalent" as recited in the instant claims.

Claim 28 recites the term "an equivalent of" a gene with the signature sequence OtS1-B7, which is indefinite. The term "equivalent of" can have multiple interpretations. The term can mean a gene that share certain identity or homology with the said signature sequence OtS1-B7; it can also mean the gene has the same function as the said signature sequence OtS1-B7; it can also mean that the encoded proteins have the same function and/or structures; etc. The instant specification states "The term "OtS1-B7 or an equivalent of OtS1-B7" is herein defined as protein (fragment) encoded by a mouse gene with the signature sequence OtS1-B7 or an equivalent thereof in another mammal, for example a human homologue of the mouse gene with the signature sequence OtS1-B7." (see bottom of para. [0005]). It appears from this definition that the term "equivalent" encompasses meanings in addition to homology, but no additional parameters are defined in the specification to clearly define the term "equivalent" besides a

reference to homology. Without a clear definition, one of ordinary skilled in the art would not be able to define the metes and bounds of the claimed invention.

Claim 28 recites the limitation "the signature sequence OtS1-B7". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

(Note: the instant claim numbers are in bold font.)

13. **Claims 28-31** are rejected under **35 U.S.C. 102(b)** as being anticipated by Figdor et al (EP 1046651 A1; Pub date: 10/25/2000).

The instant claims recite a pharmaceutical composition comprising: a substance capable of blocking a product that is expressed from a gene with the signature sequence OtS1-B7 or a

product that is expressed from a gene that is an equivalent of a gene with the signature sequence OtSl-B7, and a pharmaceutical acceptable carrier and/or diluent.

Figdor et al, throughout the publication, teach compositions and methods for modulating interaction between dendritic cells and T-cells. The reference teaches a monoclonal antibody against C-type lectin (see Claim 13 of the reference). The C-type lectin reads on "a product that is expressed from a gene with the signature sequence OtS1-B7 or a product that is expressed from a gene that is an equivalent of a gene with the signature sequence OtS1-B7", as recited in **clm 28**, because the instant specification states "C-type lectin like homologue (EST AA914211: signature sequence OtS1-B7)" (see para [0031] of the spec.), i.e. C-type lectin gene has the so called "OtS1-B7 signature sequence" or "equivalent" thereof. Thus, the monoclonal antibody against C-type lectin taught by the reference reads on the "substance capable of blocking...", as recited in **clm 28**.

The reference also teaches a pharmaceutical composition containing the said monoclonal antibody and carrier (see Claim 15 of the reference), which reads on the pharmaceutical composition, the proteinaceous substance, and the antibody (or fragment thereof) of **clms 28, 29, and 30**.

Neither the instant specification nor the claims define the sequence and/or structure for the instant claimed antibody, ERTR9, as recited in **clm 31**. The only described limiting characteristic of the ERTR9 antibody is its specific binding property to a protein product of the so-called "signature sequence OtS1-B7". The reference teaches antibodies that bind to proteins expressed from genes possessing the "signature sequence OtS1-B7" as discussed above, and thus

have the same property as ERTR9. Therefore, the reference's teaching reads on the antibody ERTR9 of **clm 31** without evidence to the contrary.

14. **Claims 28-31** are rejected under **35 U.S.C. 102(b)** as being anticipated by Au-Young et al (US 5,969,104; 10/19/1999).

Au-Young et al, throughout the patent, teach pharmaceutical compositions for treatment of diseases associated with the expression of human C-type lectin (MCTL) (see Abstract of the reference). The reference teaches generation of antibodies against C-type lectin (see Col. 29+ of the reference). The C-type lectin reads on "a product that is expressed from a gene with the signature sequence OtS1-B7 or a product that is expressed from a gene that is an equivalent of a gene with the signature sequence OtS1-B7", as recited in **clm 28**, because the instant specification states "C-type lectin like homologue (EST AA914211: signature sequence OtS1-B7)" (see para [0031] of the spec.), i.e. C-type lectin gene has the so called "OtS1-B7 signature sequence" or "equivalent" thereof. Thus, the monoclonal antibody against C-type lectin taught by the reference reads on the "substance capable of blocking...", as recited in **clm 28**.

The reference also teaches a pharmaceutical composition containing the said antibodies and carrier (see Col. 21, lines 52+ of the reference), which reads on the pharmaceutical composition, the proteinaceous substance, and the antibody (or fragment thereof) of **clms 28, 29, and 30**.

Neither the instant specification nor the claims define the sequence and/or structure for the instant claimed antibody, ERTR9, recited in **clm 31**. The only described limiting characteristic of the ERTR9 antibody is its specific binding property to a protein product of the

so-called "signature sequence OtS1-B7". The reference teaches antibodies that bind to proteins expressed from genes possessing the "signature sequence OtS1-B7" as discussed above, and thus have the same property as ERTR9. Therefore, the reference's teaching reads on the antibody ERTR9 of **clm 31** without evidence to the contrary.

15. **Claims 28-31** are rejected under **35 U.S.C. 102(e)** as being anticipated by Olson et al (US 7,022,323; 4/4/2006; Filed 6/26/2002; Priority date: 6/26/2001).

Olson et al, throughout the patent, teach methods of inhibiting HCV infection by inhibiting binding of HCV envelope glycoprotein to a DC-SIGN or DC-SIGNR protein (see Abstract of the reference). The reference teaches generation of antibodies against DC-SIGNR protein (see Claim 1 of the reference). The DC-SIGNR (DC-SIGN equivalent; See col. 4, line 1+ of the specification) reads on "a product that is expressed from a gene with the signature sequence OtS1-B7 or a product that is expressed from a gene that is an equivalent of a gene with the signature sequence OtS1-B7", as recited in **clm 28**, because the instant specification states "DC-SIGN (signature sequence OtS1-B7)", i.e. DC-SIGN is the so called "OtS1-B7 signature sequence" or "equivalent" thereof. Thus, the antibodies against DC-SIGNR or (DC-SIGN) protein taught by the reference reads on the "substance capable of blocking...", as recited in **clm 28**.

The reference also teaches a pharmaceutical composition containing the said antibodies and carrier (see para. DETX (36), and DETX (184) of the reference), which reads on the pharmaceutical composition, the proteinaceous substance, and the antibody (or fragment thereof) of **clms 28, 29, and 30**.

Neither the instant specification nor the claims define the sequence and/or structure for the instant claimed antibody, ERTR9, recited in **clm 31**. The only described limiting characteristic of the ERTR9 antibody is its specific binding property to a protein product of the so-called "signature sequence OtS1-B7". The reference teaches antibodies that bind to proteins expressed from genes possessing the "signature sequence OtS1-B7" as discussed above, and thus have the same property as ERTR9. Therefore, the reference's teaching reads on the antibody ERTR9 of **clm 31** without evidence to the contrary.

16. **Claims 28-31** are rejected under **35 U.S.C. 102(e)** as being anticipated by Littman et al (US 6,391,567; 5/21/2002; Filed 3/2/2000).

Littman et al, throughout the patent, teach compounds that modulate the interaction of DC-SIGN protein and HIV and/or T cells and macrophage (see Abstract of the reference). The reference teaches generation of antibodies against the portion of DC-SIGN protein that interact with T cells and/or macrophages (see BSTX (16) of the reference). The DC-SIGN reads on "a product that is expressed from a gene with the signature sequence OtS1-B7 or a product that is expressed from a gene that is an equivalent of a gene with the signature sequence OtS1-B7", as recited in **clm 28**, because the instant specification states "DC-SIGN (signature sequence OtS1-B7)", i.e. DC-SIGN is the so called "OtS1-B7 signature sequence" or "equivalent" thereof. Thus, the antibodies against DC-SIGN protein taught by the reference reads on the "substance capable of blocking...", as recited in **clm 28**.

The reference also teaches methods of administering the said antibodies to a subject for treatment of diseases including HIV (see para. BSTX (25) of the reference), which reads on the

pharmaceutical composition, the proteinaceous substance, and the antibody (or fragment thereof) of **clms 28, 29, and 30**.

Neither the instant specification nor the claims define the sequence and/or structure for the instant claimed antibody, ERTR9, recited in **clm 31**. The only described limiting characteristic of the ERTR9 antibody is its specific binding property to a protein product of the so-called "signature sequence OtS1-B7". The reference teaches antibodies that bind to proteins expressed from genes possessing the "signature sequence OtS1-B7" as discussed above, and thus have the same property as ERTR9. Therefore, the reference's teaching reads on the antibody ERTR9 of **clm 31** without evidence to the contrary.

17. **Claims 28-31** are rejected under **35 U.S.C. 102(b)** as being anticipated by Dijkstra et al (Immunology. Vol. 55: 23-30; 1985).

Dijkstra et al, throughout the reference, teach a monoclonal antibody, ERTR9, that specifically react with macrophage cells in the spleen marginal zone (from which the dendritic cells (DC) are a part of. The antibody, ERTR9, has the inherent property of specifically bind to DC-SIGN (dendritic cell-specific intercellular adhesion molecule 3-grabbing nonintegrin) or its homologues (mSIGNR1 encoded by cDNA OtB7), as evidenced by Geijtenbeek et al (Immunobiology. Vol. 100: 2908-2916; 6/14/2002) (see pg 2908, right col., last para., and Figure 5 and caption on pg 2914). The Geijtenbeek reference teaches generation of antibodies against the portion of DC-SIGN protein that interact with T cells and/or macrophages (see BSTX (16) of the reference). The DC-SIGN reads on "a product that is expressed from a gene with the signature sequence OtS1-B7 or a product that is expressed from a gene that is an equivalent of a

gene with the signature sequence OtS1-B7", as recited in **clm 28**, because the instant specification states "DC-SIGN (signature sequence OtS1-B7)", i.e. DC-SIGN is the so called "OtS1-B7 signature sequence" or "equivalent" thereof. Thus, the antibodies against DC-SIGN protein taught by the reference reads on the "substance capable of blocking...", as recited in **clm 28**. The ERTR9 antibody taught by the reference also reads on the proteinaceous substance and the antibody of **clms 29-31**.

Dijkstra et al do not teach the specific ERTR9 antibody as a pharmaceutical composition. However, the pharmaceutical composition phrase is construed as intended use, and does not provide structural limitation to the product (i.e. the antibody ERTR9)

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

(Note: the instant claim numbers are in bold font.)

19. **Claims 28-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dijkstra et al (Immunology. Vol. 55: 23-30; 1985) and Figdor et al (EP 1046651 A1; Pub date: 10/25/2000).

Dijkstra et al, throughout the reference, teach a monoclonal antibody, ERTR9, that specifically react with macrophage cells in the spleen marginal zone (from which the dendritic cells (DC) are a part of, as discussed supra.

Dijkstra et al do not teach the specific ERTR9 antibody as a pharmaceutical composition.

However, **Figdor et al** teach a pharmaceutical composition containing monoclonal antibody (against a product expressed from the signature sequence OtS1-B7) and carrier (see Claim 15 of the reference) as discussed supra.

Therefore, it would have been prima facie obvious for one of ordinary skilled in the art at the time the invention was made to formulate the said ORTR9 antibody into a pharmaceutical composition.

Figdor et al teach the said antibody constitutes a very useful diagnostic tool (see [0060] of pg 6), and can be used for treatment of diseases such as HIV (see [0070] of pg 7), and therefore, a person of ordinary skill in the art would have been motivated at the time of the invention to formulate the ORTR9 antibody into a pharmaceutical composition due to its specific binding property with dentritic cells (DC) that are associated with various disease mechanisms such as cancer (see [0060] of the Figdor reference).

Because formulating pharmaceutical composition with antibodies is known in the art, such as the one taught by Figdor et al, an ordinary skilled artisan would have reasonable expectation of success of achieving such modifications.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sue Liu whose telephone number is 571-272-5539. The examiner can normally be reached on M-F 9am-3pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras can be reached on 571-272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit 1639
5/25/2006

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PATENT EXAMINER